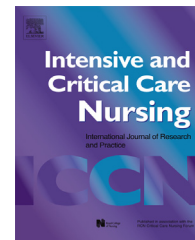




Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/icc



ORIGINAL ARTICLE

Interventional patient hygiene: Discussion of the issues and a proposed model for implementation of the nursing care basics

Kathleen M. Vollman*

Advancing Nursing LLC, United States

KEYWORDS

Basic nursing care;
Fundamentals of care;
Interventional patient hygiene;
Ventilator-associated pneumonia;
Pressure ulcer;
Bathing;
Mobility;
Patient safety;
Evidence-based practice

Summary More than 140 years ago, Florence Nightingale wrote “It may seem a strange principal to enunciate as the very first requirement in a Hospital that it should do the sick no harm.” Data suggests that 63% of all preventable errors are related to clinical problems that are within nursing’s independent scope of practice. Many of these fall in the category of “interventional hygiene” activities and include prevention of skin injury, post-operative respiratory complications and failure to rescue. As nurses we are called upon to assure higher levels of safety and quality for our patients by our governments, professional organisations and hospital administrations. It is essential that we implement evidence based nursing care strategies to reduce avoidable errors in care so that clinical outcomes improve. The author of this paper, who coined the term “interventional patient hygiene”, discusses the science related to many of these care issues and proposes an Interventional Care Model for use by nurses in redesigning how we approach nurse sensitive care practices in the future. Additionally, a change framework called “Sustaining Nursing Clinical Practice” is described to ensure reintroduction and valuing of evidence basic nursing care in conjunction with the right resources and systems to sustain the new practice.

© 2013 Elsevier Ltd. All rights reserved.

Implications for Clinical Practice

- Interventional Care Model for use by nurses in redesigning how we approach nurse sensitive care practices and patient outcomes.
- Sustaining Nursing Clinical Practice framework to ensure reintroduction and valuing of evidence basic nursing care in conjunction with the right resources and systems to sustain practice.
- A step by step approach to help move evidence-based fundamental care practices into acute and intensive care environments.

* Tel.: +1 313 570 1450.

E-mail address: kvollman@comcast.net

Introduction

In today's critical care environment, we face a difficult but essential task: to provide comprehensive, compassionate, complex, technological care without causing harm to our patients. To foster a safe patient environment it is our task to examine care practices and processes to identify and attenuate potential for error. This paper outlines the issues with our current practice of basic nursing care and describes an interventional patient hygiene care model for use by nurses in redesigning how we approach nurse sensitive care practices in the future to impact patient outcomes. In addition, a change framework called "Sustaining Nursing Clinical Practice" is described to ensure reintroduction and valuing of evidence basic nursing care in conjunction with the right resources and systems to sustain practice.

Forces driving nursing practice change

A significant force driving change is the evidence based practice movement. Evidence based practice (EBP) is the conscientious explicit and judicious integration of the best available evidence from systematic research (Sackett et al., 1996). The challenge nursing faces in our current culture is often the misrepresentation of evidence-based practice. EBP is often considered only to be practices derived and validated with RCTs. This limited interpretation may lead to our failure to consider evidence that is better than tradition based care.

Strong forces of change include those that are driven by organisational and regulatory bodies. In the United States (US) the Institute of Medicine (IOM), the Joint Commission, the Agency for Health Care Regulatory & Quality issues (AHRQ), National Quality Forum, the Institute for Health Care Improvement (IHI) & the Volunteer Hospital Association (VHA) have aligned their visions to make health care environments safer and improve the quality of patients' lives. The Centres for Medicare and Medicaid's and third party payers are changing reimbursement structures and limiting or eliminating reimbursement for preventable errors. In the US, the economic ramifications of these changes have helped to focus the momentum on safety and avoiding preventable hospital acquired conditions (Institute for Health Care Improvement Maps, 2012; Joint Commission on Accreditation of Healthcare Organizations, 2012; Kohn et al., 1999; VHA inc. Process Improvements, 2012; Wood, 2007).

With patient safety serving as the overriding goal, there is a positive movement within the profession of nursing to "get back to the basics" or "fundamentals of care" to improve care and prevent nurse associated errors/harm such as: health care acquired infections, injury related to falls, development of pressure ulcers and failure to rescue (Edwards et al., 2007). The majority of these nursing care practices fall into the category of hygiene and mobility interventions. So if nursing's fundamentals of practice are not routinely being employed as suggested by data on nurse sensitive outcomes, what are the reasons and what can we do about them?

One theory suggests that the basics of care may be absent or devalued because of limited structures that

assure reinforcement of the importance of the basics, reward/recognition for doing them, or failure to hold nurses accountable (Vollman, 2009). While untested, the theory may be used by nurses to examine the value of these care practices within their work culture. This may help identify the need for a change in culture that stresses the importance of basic nursing care functions as supported by the best evidence. For example, many nurses are able to identify or know when they make a medication error or failed to follow a physician's order. However, prior to the current patient safety movement, most frontline critical care nurses were unaware of data related to nurse sensitive outcomes such as ventilator associated pneumonia, blood stream infection; pressure ulcer incident and urinary tract infection. These indicators are all considered nurse sensitive outcomes for the quality of nursing care delivered (NQF, 2004). As noted by Skinner (1960) "behaviour that is reinforced continues, behaviour that is not reinforced stops". In essence, care practices, and their value, may have been "conditioned" out of the nurse. The disease focused model of diagnosis and treatment has been the dominant care delivery model within most of our acute care environments. Unfortunately, prevention of complications has been less so. It is time for our profession and each individual nurse to reclaim the fundamentals of nursing that are essential to positive patient outcomes and use evidence based practice to drive the transformation.

Interventional patient hygiene: building a usable model

This transformational journey is similar to launching a campaign and therefore may benefit from a recognizable name and model to help ensure the transformation. Use of a model may help clarify and provide a means to articulate nursing's unique contributions to healthcare. Two categories, evidence-based interventional hygiene and mobility strategies, if placed within the context of a comprehensive programme for reducing error, may help prioritize a list of care activities for critical care nurses. Positive outcomes may follow.

Webster's dictionary defines hygiene as the science of establishing and maintaining health (Merriam-Webster, 2012). The goal of basic nursing care is to proactively intervene with nursing interventions that focus on using evidence-based hygiene and mobility strategies to reduce health care acquired infections and skin injuries. These hospital-associated conditions are linked to increases in patient morbidity and mortality as well as significant cost burden to our health care systems. The term "interventional patient hygiene" (IPH) was created as a model for a systematic approach using evidence based nursing care interventions to prevent health care acquired conditions (Vollman et al., 2005). The components of the model include oral cleansing, patient mobility, dressing changes, urinary catheter care, bathing and incontinence management (Vollman, 2009) (Fig. 1). McGuckin et al. (2008) expanded the IPH model to incorporate hand hygiene and skin anti-sepsis (McGuckin et al., 2008).

A survey was conducted to determine the knowledge base of infection preventionists and nurses related to the

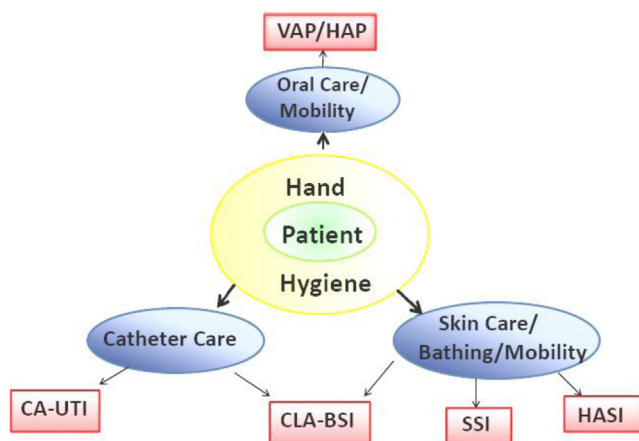


Figure 1 Interventional patient hygiene: a conceptual framework.

components of the interventional patient hygiene model. Surveys were sent to a random sample of 1178 nurses at the American Association of Critical Care Nurses National Teaching Institute and 1776 infection preventionists attending the Association of Professionals in Infection Control and Epidemiology. The response rate was 15%, representing 31% infection preventionists, 42% RN's and 37% certified critical care nurses. Findings of the survey revealed an excellent knowledge base of five major components of the model; hand hygiene (96%), oral hygiene (95%), early pre-op skin prep (70%), bathing/skin care (94%), incontinence care (93%); the mobility component was not evaluated. However, the group demonstrated less knowledge about nursing interventions, as delineated in the IPH model, to prevent untoward patient outcomes.

Respondents reported that they were aware of the scientific evidence supporting IPH interventions as follows: incontinence care – 75%, surgical site infections – 66% and ventilator-associated pneumonia – 86%. Additional questions included whether the institution had an IPH policy, whether IPH information was included in orientation, and if education about the topics had been provided to all staff within the previous year. Between 35% and 49% stated their institution had an IPH policy, 42% stated it was included in orientation and that they had received education within the previous two years. The survey findings suggest we have a way to go to improve the culture of nurses as it relates to ‘owning and acting’ on IPH components that are within our scope of practice.

IPH model examples: bathing & incontinence & mobility

To ensure understanding of the model and demonstrate use in the clinical environment, two examples of evidence based bathing and incontinence care as well as mobility interventions follows.

Carr and colleague studied the efficiency of an evidenced based IPH protocol aimed at reducing the incidence of hospital acquired pressure ulcers and impaired skin integrity. Licensed and unlicensed personnel within a 21 bed Surgical ICU at a University Medical Center were educated on

an IPH programme incorporating evidence based comprehensive bathing and incontinence management along with a communication strategy for early dedication of skin injury. A pre and post nurse sensitive outcome measure of pressure ulcer rates was compared after a 4-month intervention period, which represented 2000 patient days. The incidence of pressure ulcers decreased from 7.14% to 0% at the end of the study. A pre and post knowledge survey demonstrated a significant increase in knowledge of the IPH protocol and recognition of skin injury (Carr and Benoit, 2009). While the study only represented a short time interval, the fact that the educational and process interventions made a positive impact on the variables of interest is encouraging.

Immobility plays a significant role in ICU acquired weakness and long term physical dysfunction. (De Jonnghe et al., 2007; Greenleaf and Kozlowski, 1982; Kortebein et al., 2007; Schweickert et al., 2009) Physical inactivity also contributes to the development of atelectasis, insulin resistance and joint contractures (Clavet et al., 2008; Hamburg et al., 2007) The short-term negative outcomes for critically ill patients include ventilator and hospital acquired pneumonia, delayed weaning related to muscle weakness and the development of pressure ulcers (Schweickert et al., 2009; Morris, 2007; Topp et al., 2002; Reddy et al., 2006; Vollman, 2006) Lack of early ICU mobility is an independent predictor for readmission or death in patients with Acute Respiratory Failure (Morris et al., 2011). The major long term complication associated with immobility is decreased quality of life after discharge due to the physical de-conditioning that occurs during the ICU stay (Dowdy et al., 2005, 2006; Herridge et al., 2003, 2011; Hopkins et al., 2005).

Numerous studies support the importance of incorporating early mobility programmes in conjunction with sedation withdrawal protocols within the ICU to improve outcomes (Morris et al., 2008; Needham et al., 2010; Schweickert et al., 2009). Early mobility programmes demonstrate how the nursing can impact outcomes through decreasing time of the ventilator, ICU and hospital length of stay, VAP and pressure ulcers (Dammeyer et al., 2013; Dickinson and Tschannen, 2013; Titswroth et al., 2012). Additional positive outcomes include; greater ventilator free days, decreased duration of delirium and improved physical functioning before and after discharge from the hospital (Bailey et al., 2005; Greenleaf, 1997; Martin et al., 2005; Morris et al., 2008; Needham et al., 2010; Needham, 2008; Thomsen et al., 2008). Many successful programmes are driven by a readiness assessment performed by the nurse in consultation with physiotherapists and medical colleagues and the initiation of a mobility protocol (Bailey et al., 2007; Bassett et al., 2012). The connection between the basic nursing care practice of mobilisation to improved patient outcomes is clear.

Securing successful integration of the basics

Success in nursing's journey will be fleeting if the fundamentals are reintroduced as the basic care nurses has been performing for years or initiated as a process followed by audits alone. Instead, successful transformation begins with developing a culture that values the importance of these care practices and the evidence that supports them. While

providing evidence based education, frequent motivational reminders may be inserted that reinforce the understanding that fundamental/basic care practices are core to the profession of nursing, are independent in scope and if not performed or delegated by us, may cause patient harm. This is authentic patient advocacy.

However, patient advocacy by nurses is often articulated and performed within a narrow window of a single incidence where the nurse serves as the voice for the patient to ensure “the right thing happens” and/or application of evidence based care. Nurse advocacy must reach beyond that view to encompass preventing harm within the context of all clinical practice. For example, use of a valid and reliable risk screen that is acted upon by the nurse, is an evidence based way to prevent harm. Unfortunately, often the screens are viewed as required documentation to fulfil criteria for a regulatory body versus essential to the nurses’ independent role in evidence-based application of care assessment and intervention.

Numerous studies have shown that education/skill building is not enough to effect sustainable change (Cochrane Database, 2002; Grol, 1997). Multimodal strategies that evaluate the available nursing resources and systems in order to effect change, make it easier for the clinician to achieve an effective and consistent practice. Such initiatives have shown greater success (Abbott et al., 2006; Fuchs et al., 2011; Westwell, 2008). For example, consider how difficult it is to achieve evidenced based bathing that includes the correct pH cleanser, no-rinse solutions, lotions, cloths that do not damage the skin, and a process that reduces the bacterial colonization without assuring an easy to use bath product that is available on the unit. The technology has been available for over 15 years to ensure that an evidence-based bath may be provided for every patient using package bathing. However, many hospitals still bathe with a basin using a multistep process that creates significant variation. Basin bathing is still taught as the routine way to bathe a patient in a majority of nursing schools around the world. However, the evidence demonstrates that a large percentage of bath basins are contaminated (Johnson et al., 2009; Marchaim et al., 2012; Shannon et al., 1999). A systematic review of the literature demonstrated that tap water is a major offender in the development of waterborne pathogen infections in acute care hospitals. The authors’ recommend the use of pre-packaged disposable bathing cloths (Anaissie et al., 2002). The type of soap used can negatively impact the skin pH encouraging greater colonization (Korting and Braun-Falco, 1996). Wash cloths with their rough surfaces have been shown to increase the amount of transepidermal water loss causing drying of the skin and negatively impacting the skin barrier function (Voegeli, 2008). Lotion use depends on the individual care givers ability to remember and obtain the product at the bedside. If we are to practice using the evidence it is essential that the latest technology that makes the basic care practices safe and effective be affordable, user friendly, and consistently achievable.

Once the resources are present and systems designed to deliver the care and evaluate effectiveness, then we can truly hold the individual nurse accountable for the practice. Fig. 2 illustrates the three components just described in a framework entitled “Sustaining Nursing Clinical Practice”.



Figure 2 Sustaining nursing care practice.

It may be used for any change in clinical practice but its application is critical for reintroduction and valuing of evidence-based fundamental/basic nursing care practices.

Moving the evidence into practice

Moving the latest evidence into our fundamental nursing practices may be challenging and is best accomplished by using an organized approach. Step 1 involves performing an initial assessment of the current practices in oral care, mobility, bathing, and incontinence management and invasive line and urinary catheter insertion and management. Identification of practices that are not evidence based is essential (Table 1). Step 2 encompasses consolidation of current hygiene and mobility practices under the framework of a comprehensive interventional patient hygiene. Measurement of baseline data using standard definitions for health care acquired pneumonia, pressure ulcer incidence rate, blood stream infection rates, symptomatic urinary catheter infection rates and incontinence associated dermatitis are key to monitoring progress or lack thereof. The value of these care practices are highlighted with the staff by sharing the scientific evidence and eliciting their participation in the establishment of protocols and guidelines. Using a shared decision-making model, step 3 contains selecting processes and products that help support compliance of the protocols and help nurses consistently do the right thing in an efficient manner. Step 4 is implementation of the change. Post implementation rates are measured after ensuring sufficient compliance with practice changes. Findings are then compared against baseline data, regional and national benchmarks if available. The final step is the continued measurement of compliance on a quarterly basis until the new practice becomes part of the routine. Essential to the success of the process is to ensure ownership and participation of all key practitioners. This will allow the change to become real and permanent. The goal is to weave the new care practices into the fabric of the unit/organization to create a safer patient environment (Garland, 2005a, 2005b).

Table 1 5 step process for implementation of interventional patient hygiene.

Step 1:

- Perform an initial assessment of the current practices in oral care, suctioning, mobility, bathing and incontinence management
- Determine which practices are currently not evidence based

Step 2:

- Consolidation of current hygiene and mobility practices under the framework of a comprehensive interventional patient hygiene bundle
- Measure baseline data using standard definitions for VAP and pressure ulcer incidence rate
- Build value care practices by sharing the scientific evidence and eliciting their participation in the establishment of protocols and guidelines

Step 3:

- Select processes and products that help support compliance of the protocols using a shared decision-making model

Step 4:

- Implement the change
- Measure rates post implementation after ensuring sufficient compliance with practice changes
- Compare findings against baseline data, regional and national benchmarks if available
- Celebrate the success looking for progress, not necessarily perfection

Step 5:

- Continued measurement of compliance on a quarterly basis until the new practice becomes part of the routine

© Advancing Nursing 2005.

We are responsible for assuring that our current nursing and unit work cultures value and incorporate hygiene care practices and mobility activities as they are fundamental and independent care components of nursing. When implemented, using available evidence, they can significantly improve patient outcomes. The IPH model described in the paper and the change framework are tools for the caregiver to begin the discussion, revaluing, education, resource attainment and systems development to ensure evidence based transformation of nursing care. It is time to reclaim and demonstrate the importance of the consistent delivery of the basics of nursing care.

References

- Abbott CA, Dremsa T, Stewart DW, Mark DD, Swift CC. Adoption of a ventilator-associated pneumonia clinical practice guideline. *Worldviews Evidence Based Nurs* 2006;3(4):139–52.
- Anaissie E, et al. The hospital water supply as a source of nosocomial infection. *Arch Intern Med* 2002;162:1483–92.
- Bailey PB, Thomsen GE, Bezdjian L. The progression of early activity in mechanically ventilated patients is improved upon transfer within ICUs. *Crit Care* 2005;33:118.
- Bailey P, Thomsen GE, Spuhler VJ, et al. Early activity is feasible and safe in respiratory failure patients. *Crit Care Med* 2007;35:139–45.
- Bassett RD, Vollman KM, Brandwene L, Murray T. Integrating a multidisciplinary mobility programme into intensive care practice (IMMPTP): a multicenter collaborative. *Intens Crit Care Nurs* 2012;28(2):88–97.
- Carr D, Benoit R. The role of interventional patient hygiene in improving clinical and economic outcomes. *Adv Skin Wound Care* 2009;22:74–8.
- Clavet H, Hebert PC, Fergusson D, Doucette S, Trudel G. Joint contracture following prolonged stay in the intensive care unit. *CMAJ* 2008;178:691–7.
- Cochrane Effective Practice and Organization of Care Group. Guidelines in professions allied to medicine: a systematic review of the literature. *Cochrane Database* 2002(4).
- Dammeyer JA, Baldwin N, Harrington S, et al. Mobilizing outcomes: implementation of a nurse-led multidisciplinary mobility program. *Crit Care Nurs Quart* 2013;36:109–19.
- De Jonghe B, Bastuji-Garin S, Durand MC, et al. Respiratory weakness is associated with limb weakness and delayed weaning in critical illness. *Crit Care Med* 2007;39:2007–15.
- Dickinson S, Tschannen D. Can the use of an early mobility program reduce the incidence of pressure ulcers in a surgical critical care unit. *Crit Care Nurs Quart* 2013;36:127–40.
- Dowdy DW, Eid MP, Sedrakyan A, et al. Quality of life in adult survivors of critical illness: a systematic review of the literature. *Intens Care Med* 2005;31(5):611–20.
- Dowdy DW, Eid MP, Dennison CR, et al. Quality of life after acute respiratory distress syndrome: a meta-analysis. *Intens Care Med* 2006;32(8):1115–24.
- Edwards JR, Peterson KD, Andrus ML, et al. National healthcare safety network (NHSN) report, data summary for 2006, issued June 2007. *Am J Infect Control* 2007;35:290–301.
- Fuchs MA, Sexton DJ, Thornlow DK, Champagne MT. Evaluation of an evidence-based, nurse-driven checklist to prevent hospital-acquired catheter-associated urinary tract infections in intensive care units. *J Nurs Care Qual* 2011;26(April–June (2)):101–9.
- Garland A. Improving the ICU. Part 1. *Chest* 2005a;127:2151–64.
- Garland A. Improving the ICU. Part 2. *Chest* 2005b;127:2165–79.
- Greenleaf JE. Intensive exercise training during bed rest attenuates deconditioning. *Med Sci Sports Exerc* 1997;29:207–15.
- Greenleaf JE, Kozlowski S. Physiological consequences of reduced activity during bed rest. *Exerc Sport Sci Rev* 1982;10:84–119.
- Grol R. Personal paper: beliefs and evidence in changing practice. *Br Med J* 1997;315(T105):418–21.
- Hamburg NM, McMackin CJ, Huang AL, et al. Physical inactivity rapidly induces insulin resistance and microvascular dysfunction in healthy volunteers. *Arterioscler Thromb Vasc Biol* 2007;27:2650–6.
- Herridge MS, Cheung AM, Tansey CM, et al. One year outcomes in survivors of the acute respiratory distress syndrome. *N Engl J Med* 2003;348(8):683–93.
- Herridge MS, Tansey CM, Matte A, et al. Functional disability 5 years after acute respiratory distress syndrome. *N Engl J Med* 2011;364(14):1293–304.
- Hopkins RO, Weaver LK, Collingridge D, et al. Two-year cognitive, emotional, and quality-of-life outcomes in acute respiratory distress syndrome. *Am J Respir Crit Care Med* 2005;171(4):340–7.
- Institute for Health Care Improvement Maps. <http://www.ihc.org/offering/Initiatives/Improvemaphospitals/Pages/default.aspx> [accessed November 2012].
- Johnson D, Lineweaver L, Maze LM. Patients' bath basins as potential sources of infection: a multicenter sampling study. *Am J Crit Care* 2009;18(1):31–40.
- Joint Commission on Accreditation of Healthcare Organizations. National Patient Safety Goals. <http://www.jointcommission.org>

- [org/standards_information/npsgs.aspx](http://www.aacn.org/standards_information/npsgs.aspx) [accessed November 2012].
- Kohn KT, Corrigan JM, Donaldson MS. *To err is human: building a safer health system*. Washington, DC: National Academy Press; 1999.
- Kortebein P, Ferrando A, Lombeida J, Wolfe R, Evans WJ. Effect of 10 days of bed rest on skeletal muscle in healthy older adults. *J Am Med Assoc* 2007;297:1772–4.
- Korting HC, Braun-Falco O. The effect of detergents on skin pH and its consequences. *Clin Dermatol* 1996;14:23–7.
- Marchaim D, Taylor AR, Hayakawa K, et al. Hospital bath basins are frequently contaminated with multidrug-resistant human pathogens. *Am J Infect Control* 2012;40(6):562–4.
- Martin UJ, Hincapie L, Nimchuk M, Gaughan J, Criner GJ. Impact of whole-body rehabilitation in patients receiving chronic mechanical ventilation. *Crit Care Med* 2005;33:2259–65.
- McGuckin M, Shubin A, Hujcs M. Interventional patient hygiene model: infection control and nursing share responsibility for patient safety. *Am J Infect Control* 2008;36:59–62.
- Merriam-Webster Online Dictionary. <http://www.merriam-webster.com/dictionary/hygiene> [accessed November 2012].
- Morris PE. Moving our critically ill patients: mobility barriers and benefits. *Crit Care Clin* 2007;23(1):1–20.
- Morris PE, Goad A, Thompson C, et al. Early intensive care mobility therapy in the treatment of acute respiratory failure. *Crit Care Med* 2008;36:2238–43.
- Morris PEMD, Griffin LMS, Berry MP, et al. Receiving early mobility during an intensive care unit admission is a predictor of improved outcomes in acute respiratory failure. *Am J Med Sci* 2011;341(5):373–7.
- Needham DM. Mobilizing patients in the intensive care unit: improving neuromuscular weakness and physical function. *J Am Med Assoc* 2008;300(14):1685–90.
- Needham DM, Korupolu R, Zanni JM, et al. Early physical medicine and rehabilitation for patients with acute respiratory failure: a quality improvement project. *Arch Phys Med Rehabil* 2010;91(4):536–42.
- National Quality Forum. National voluntary consensus standards for nursing-sensitive care: an initial performance measure set. Washington, DC; 2004.
- Reddy M, Gill SS, Rochon PA. Preventing pressure ulcers: a systematic review. *J Am Med Assoc* 2006;296(8):974–83.
- Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *Br Med J* 1996;312:71–2.
- Schweickert WD, Pohlman MC, Pohlman AS, et al. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomized controlled trial. *Lancet* 2009;373:1874–82.
- Shannon R, Allen M, Durbin AJ, et al. Patient bath water as a source of nosocomial microbiological contamination: an intervention study using chlorhexidine. *J Healthcare Safety Compliance Infect Control* 1999;3(4):180–4.
- Skinner BF. Modern learning theory and some new approaches to teaching. In: Gustad JW, editor. *Faculty utilization and retention*. Winchester, MA: New England Board of Higher Education; 1960. p. 64–72.
- Thomsen GE, Snow GL, Rodriguez L, Hopkins RO. Patients with respiratory failure increase ambulation after transfer to an intensive care unit where early activity is a priority. *Crit Care Med* 2008;36:1119–24.
- Titsworth WL, Hester J, Correia T, et al. The effect of increased mobility in the neurointensive care unit. *J Neurosurg* 2012;116:1379–88.
- Topp R, Ditmyer M, King K, et al. The effect of bedrest and potential prehabilitation on patients in the intensive care unit. *AACN Clin Issues* 2002;13(2):263–76.
- VHA inc. Process Improvements. https://www.vha.com/portal/server.pt?in_hi_space=SearchResult&in_hi_control=bannerstart&in_tx_query=TICU [accessed November 2012].
- Voegeli D. The effect of washing and drying practices on skin barrier function. *J Wound Ostomy Continence Nurs* 2008;35(1):84–90.
- Vollman KM. Ventilator-associated pneumonia and pressure ulcer prevention as targets for quality improvement in the ICU. *Crit Care Nurs Clin N Am* 2006;18:453–67.
- Vollman KM. Back to the fundamentals of care: why us? Why now? *Aust Crit Care* 2009;22(4):152–4.
- Vollman K, Garcia R, Miller L. Interventional patient hygiene: proactive (hygiene) strategies to improve patient's outcomes. *AACN News* 2005;22(8):1–7.
- Westwell S. Implementing a ventilator care bundle in an adult intensive care unit. *Nurs Crit Care* 2008;13(4):203–7.
- Wood DA. Medicare to stop paying for some health care-acquired conditions. *Nurse.com*. <http://news.nurse.com/apps/pbcs.dll/article?AID=/20070924/FLORIDA09/309240003/1007/Florida> [accessed 05.10.07].

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.